ARO Tool Products

OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

BANT–A–MATIC® SELF–FEED DRILLS

Models 8248–B( )–( )

SECTION	M106
MANUAL	21
Released:	4–1–88
Revised:	12–12–94
Form:	3262–2

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

OPERATING PRECAUTIONS

- Keep hands and clothing away from rotating end of tool.
- Wear suitable eye protection while operating tool.
- Disconnect air supply from tool before removing/installing bit or performing other maintenance procedures.

ROUTINE LUBRICATION REQUIREMENTS

Lack of or an excessive amount of lubrication will affect the performance and life of this tool. Use only recommended lubricants at below time intervals:

EVERY 8 HOURS OF TOOL OPERATION – Fill lubricator reservoir of recommended F.R.L. with spindle oil (29665).

EVERY 160 HOURS OF TOOL OPERATION – Inject NLGI #1 "EP" grease (33153), 1 to 2 strokes, thru grease fitting in gear housing. NOTE: Spindle must be extended from outer sleeve sufficiently to expose grease fitting in gear housing. Gearing should contain approximately 1/8 oz. (3.5 g) of grease.

AIR SUPPLY REQUIREMENTS

For maximum operating efficiency, the following air supply specifications should be maintained to this air tool:

- AIR PRESSURE – 90 PSIG (6 bar)
- AIR FILTRATION – 50 micron
- LUBRICATED AIR SUPPLY
- HOSE SIZE – 5/16" (8 mm) I.D.

An ARO® model C28231–810 air line FILTER/REGULATOR/LUBRICATOR (F.R.L.) is recommended to maintain the above air supply specifications.

MOUNTING

The nose end of the outer sleeve (41) is provided with 1–7/16" – 18 L.H. threads [remove thread guard (47) for use] and a 1–7/16" x 1/2" long pilot diameter for fixture mounting. Foot and flange type mounting brackets are available for tool mounting.

RECOMMENDED LUBRICANTS

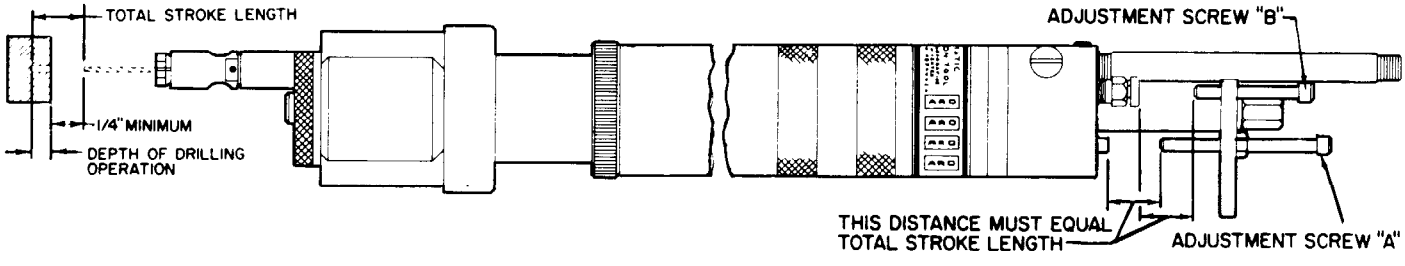
After disassembly is complete, all parts, except sealed or shielded bearings, should be washed with solvent. To relubricate parts, or for routine lubrication, use the following recommended lubricants:

Where Used	ARO Part #	Description
Air Motor	29665	1 qt. Spindle Oil
"O" Rings & Lip Seals	36460	4 oz. Stringy Lubricant
Gears and Bearings	33153	5 lb. "EP" – NLGI #1 Grease

SET–UP PROCEDURE

WARNING: Keep clear of rotating end of unit with hands and/or clothing. Keep fingers/hands from being pinched between housing or valves and adjustment screws and/or trip bracket.

- Loosen two screws (29) and remove cover (1).
- Allow a minimum distance of 1/4" between the drill point of the unit and the workpiece. This is necessary for the air motor to start and reach free speed before the drill point touches the workpiece.
- Determine the TOTAL STROKE LENGTH the drill must travel to perform the drilling operation – see illustration below.
- Loosen jam nut (8) and turn adjustment screw "A" so the distance between the end of the screw and the stud (26) equals the total stroke length.
- Tighten jam nut (8).
- Loosen jam nut (8) and turn adjustment screw "B" (valve–in–head models only) so the distance between the end of the screw and the button bleed valve (25) is slightly GREATER than the distance set for adjustment screw "A".
- Start and let the unit advance until the adjustment screw "A" makes contact with the stud (26).
- Carefully, and be aware that the unit is going to retract, turn the adjustment screw "B" until it depresses the button bleed valve (25) enough to cause the unit to retract.
- Tighten jam nut (8).
- See "FEED RATE CONTROL VALVES", page 2.



For parts and service information, contact your local ARO distributor, or the Customer Service Dept. of the Ingersoll–Rand Distribution Center, White House, TN at PH: (615) 672–0321, FAX: (615) 672–0601.

ARO Tool Products
Ingersoll–Rand Company
1725 U.S. No. 1 North • P.O. Box 8000 • Southern Pines, NC 28388–8000

INGERSOLL-RAND®
PROFESSIONAL TOOLS

FEED RATE CONTROL VALVES

- Turn valve (23), marked "R" on top of housing, approximately 1-1/2 turns counterclockwise (open).
- Turn the other valve (23), marked "F" on top of housing, clockwise until closed (do not tighten too snugly).
- Start unit and slowly turn valve (23) marked "F" counterclockwise (open) until the desired forward rate of feed is reached.
- A final adjustment of the rate of return (retract) can be made with the valve (23) marked "R" on housing.

MANUAL OPERATION

- Install button bleed valve (25) in either the "F" port located at top of valve housing or the "F" port located at the rear of valve housing. NOTE: Unused port must be plugged with pipe plug (24).
- Depress button bleed valve (25) marked "F" on valve housing. The unit will start in the forward (advancing) mode and continue to feed forward until the adjusting screw "B" has depressed bleed valve (25) marked "R" to retract the unit. See set-up procedure.
- A manual emergency retract button bleed valve (25) can be installed in "R" port at top of valve housing if desired. This valve can be used to immediately retract the unit in case of misaligned part or other emergency. Valve not furnished.

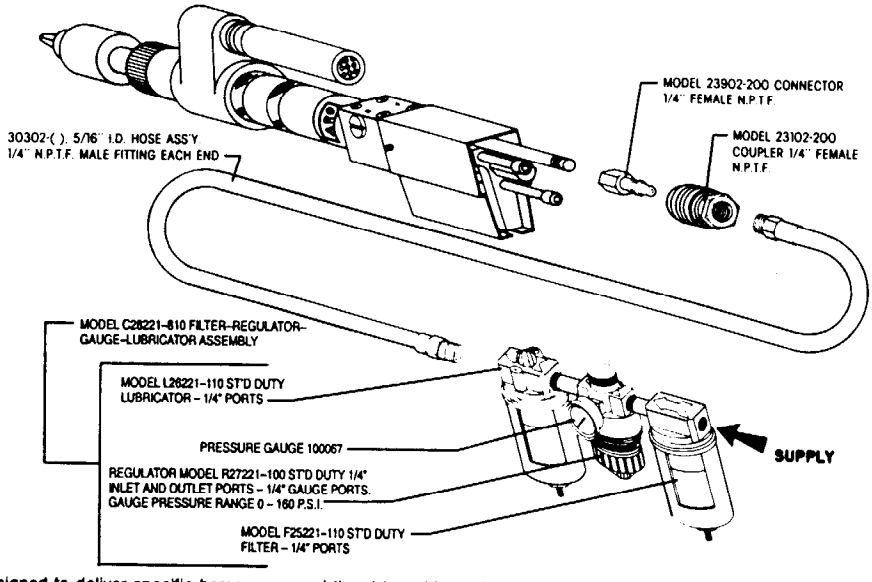
REMOTE OPERATION

- Install a pressure bleed valve – ARO part number 9600 – in valve port marked "F" at either the top or rear of valve housing.
- Connect pressure bleed valve – using 1/8" i.d. tubing – to a remote operated valve which, when actuated, feeds air pressure to the pressure bleed valve. Pressure bleed valve will bleed the air from "F" port of valve housing causing spool valve in housing to shift to the forward feed position thus starting the forward stroke of the unit.
- Install a pressure bleed valve – ARO part number 9600 – in valve port marked "R" at the TOP of the valve housing and connect – using 1/8" i.d. tubing – to a remote MANUALLY operated valve. This valve is used as an emergency retract in case of a part misalignment or such only as the unit, when properly set-up and applied, will automatically retract and return to the start position. See set-up procedure.

Refer to page 11 for plumbing and schematic diagrams.

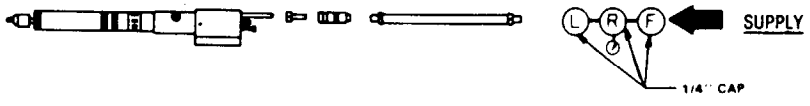
SPECIAL NOTE: The air inlet and remote ports of valve housing have tapered pipe threads and should not require the use of thread sealants, such as sealant tape or pipe joint compounds. Thread sealants when used improperly can contaminate air passages and cause valve or unit to malfunction.

RECOMMENDED POWER AIR INLET SYSTEM



Your ARO Self-Feed tool is designed to deliver specific horsepower and thrust to achieve high rates of work. To assure the unit will develop this power, care must be taken that the power air inlet system is correctly sized to permit the proper rate of air flow. Shown is a system for a single tool that will supply correct delivery. IMPORTANT – the tool is power rated when 90 P.S.I. is present AT THE TOOL DURING OPERATION.

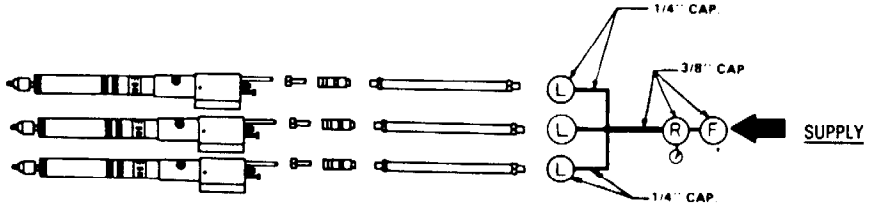
Shown below is the same system in schematic form.



F = FILTER
R = REGULATOR
L = LUBRICATOR

F-R-L- MODEL C28221-810

If two or three units are to be installed, each unit should be supplied with a system like that shown below or use system like that above for each tool.



FILTER MODEL F25231-110
REGULATOR MODEL R27231-100
LUBRICATOR MODEL L26221-110

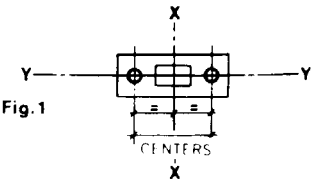


Fig.1

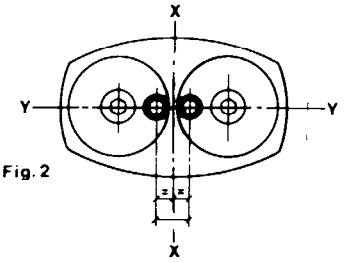


Fig.2

FOR SIMPLE SPINDLE ADJUSTMENT THE "X" "X" AND "Y" "Y" AXIS OF THE COMPONENT SHOWN IN FIG 1 SHOULD COIN CIDE WITH THE "X" "X" AND "Y" "Y" AXIS OF THE DRILL HEAD AND DRILLING UNIT AS SHOWN IN FIG 2 THE SPINDLES SHOULD THEN BE ADJUSTED IN THE MANNER SHOWN IN FIGS 3 AND 4

IMPORTANT
IF THE PROCEDURE IS NOT FOLLOWED AND BOTH SPINDLES ARE MOVED OUT TO ONE SIDE OF THE HEAD ANY SUBSE QUENT SPINDLE ADJUSTMENT WILL RESULT IN THE NECESSITY OF HAVING TO RE ADJUST THE RELATIONSHIP BETWEEN THE DRILLING UNIT AND THE COMPONENT

FIG 2 SHOWS THE TWIN SPINDLE HEAD WITH THE SPINDLES SET TO THE MINIMUM CENTERS

TO ADJUST THE SPINDLES AS SHOWN IN FIG 3, LOOSEN BOTH SCREWS "A" AND ROTATE BOTH TURRETS IN THE DIRECTION INDICATED BY THE ARROWS TO THE APPROX IMATE CENTERS THAT ARE REQUIRED

ROTATE THE COMPLETE DRILL HEAD ASSEMBLY TO BRING BOTH SPINDLES TO THE REQUIRED "Y" "Y" AXIS AS SHOWN IN FIG 4 FINALLY ADJUST SPINDLE CENTERS ON AXIS "Y" "Y" TO SUIT GAUGE OR DRILL BUSHINGS AND TIGHTEN SCREWS "A" SECURELY

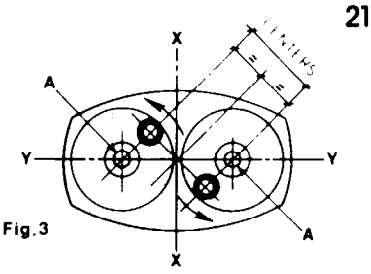


Fig.3

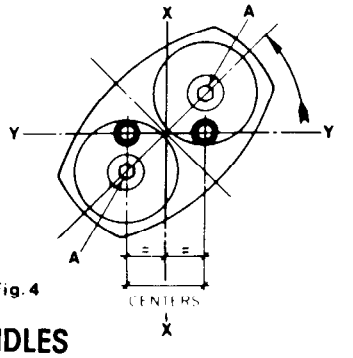


Fig.4

RECOMMENDED METHOD FOR HOLDING DRILLS IN SPINDLES

To properly hold drill bit in collet and reduce the chance of slippage, a flat must be ground on the shank end of the bit. The flat should be approximately 5/16" (8mm) long and the depth should be 1/3 of the bit diameter. NOTE: If bit is too large to fit into locking insert (smaller capacity Dual Spindles do not have insert), a square must be ground onto the shank end of the bit.

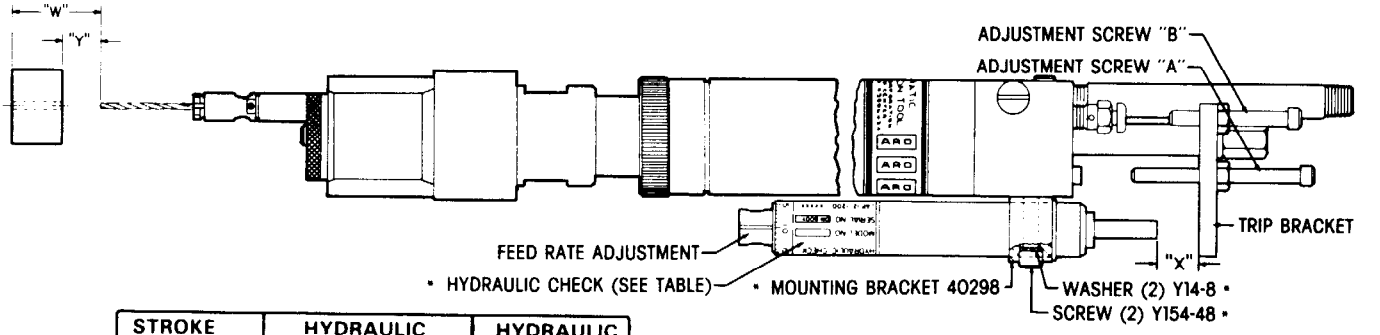
Insert bit into spindle and into locking insert (where applicable) insuring that one of the set screws locates squarely on the flat of the bit. Tighten collet firmly, then tighten set screws. NOTE: DO NOT overtighten collet. NOTE: Intent of set screws is only to keep bit from turning in collet.

SET-UP PROCEDURE WITH OPTIONAL HYDRAULIC CHECK

- Assemble hydraulic check to mounting bracket and assemble mounting bracket to tool using washers (Y14-8) and cap screws (Y154-48).
- Measure distance from drill point to work piece – distance "Y".
- Distance "X" between hydraulic check plunger and trip bracket must be less than distance "Y" to prevent damage to drill point when it approaches the work piece.
- Loosen the cap screws (Y154-48) and position hydraulic check to obtain correct setting for distance "X".
- Tighten cap screws (Y154-48) securely before operating unit.
- Increase the air flow thru the Feed Control Valve marked "F" by opening two (2) full turns from closed position. This will allow drill to advance rapidly until the trip bracket contacts plunger of hydraulic check.
- The Hydraulic Feed Rate Adjustment is located at the name plate end of the Hydraulic Check. Rotate extended spindle until the slot on spindle is located midway between the highest and the lowest settings.
- Start drill unit and the drill will advance at a rapid rate until the trip bracket contacts plunger of hydraulic check.
- Slowly rotate the Hydraulic Feed Rate counter clockwise for faster feed rate or clockwise for slower feed rate.

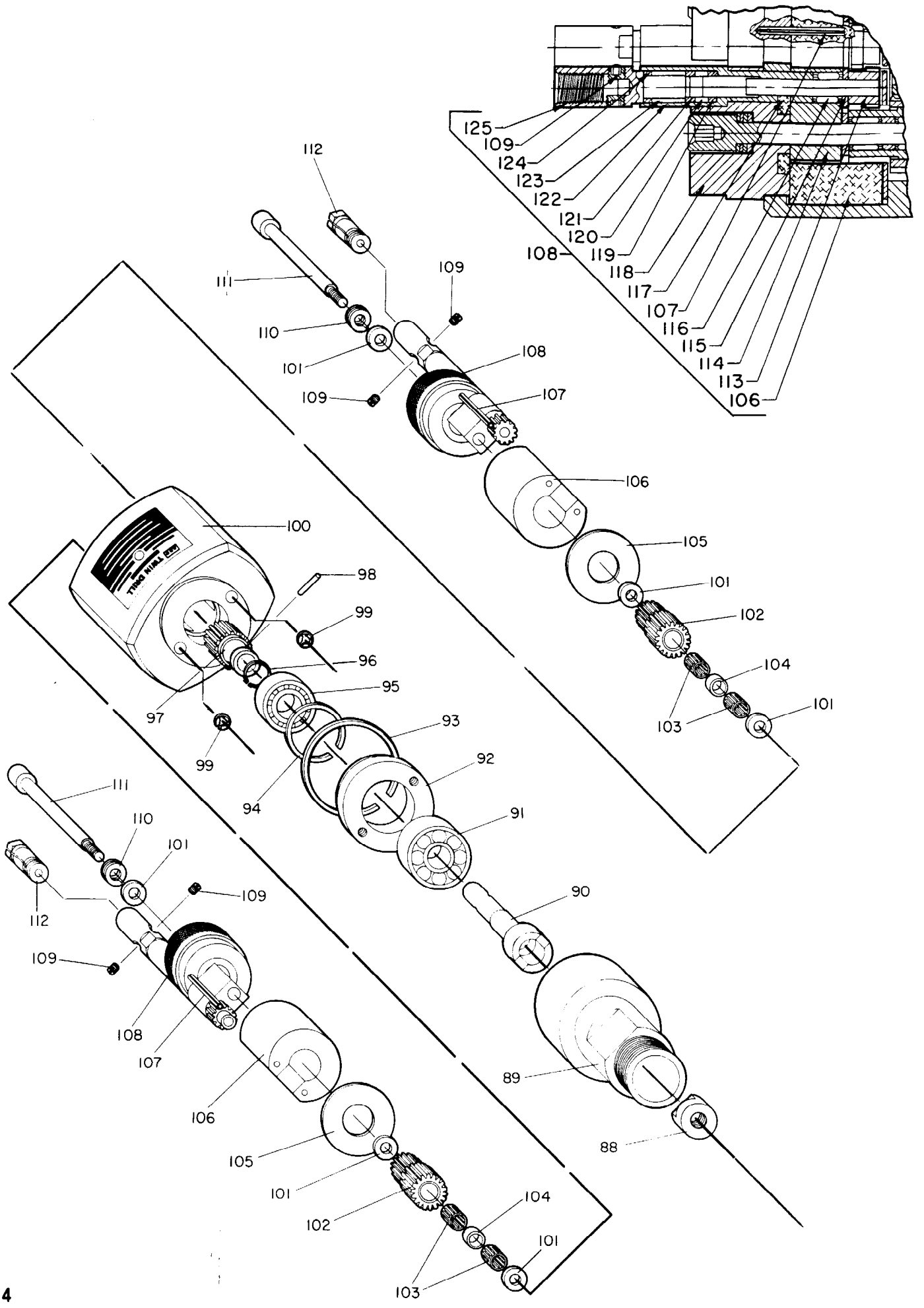
TO CONTROL BREAKTHROUGH

- Position hydraulic check so the distance between the plunger and the trip bracket (distance "X") is less than the distance from the drill point to the opposite side of the work piece (distance "W").
- Set-up of the self-feed drill unit will be the same as explained in Set-Up Procedure, page 1.



STROKE LENGTH	HYDRAULIC CHECK ASS'Y	HYDRAULIC CHECK NO.
1 INCH	40301-2	38922
2 INCH	40301-3	38922-1
3 INCH	40301-4	38922-2

PARTS INDICATED BY ASTERISK (*) ARE INCLUDED IN 40301-( ) HYDRAULIC CHECK ASSEMBLY.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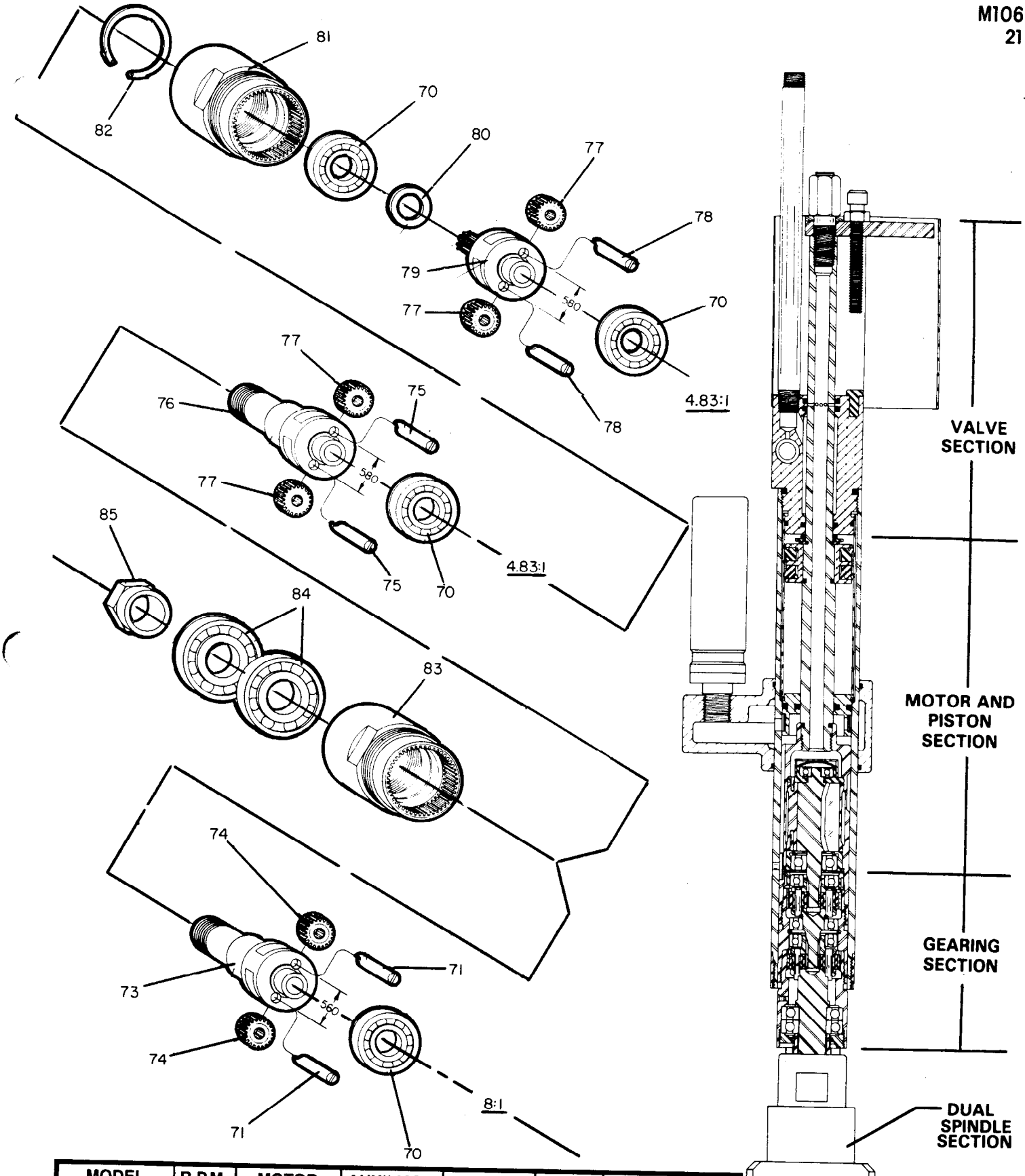
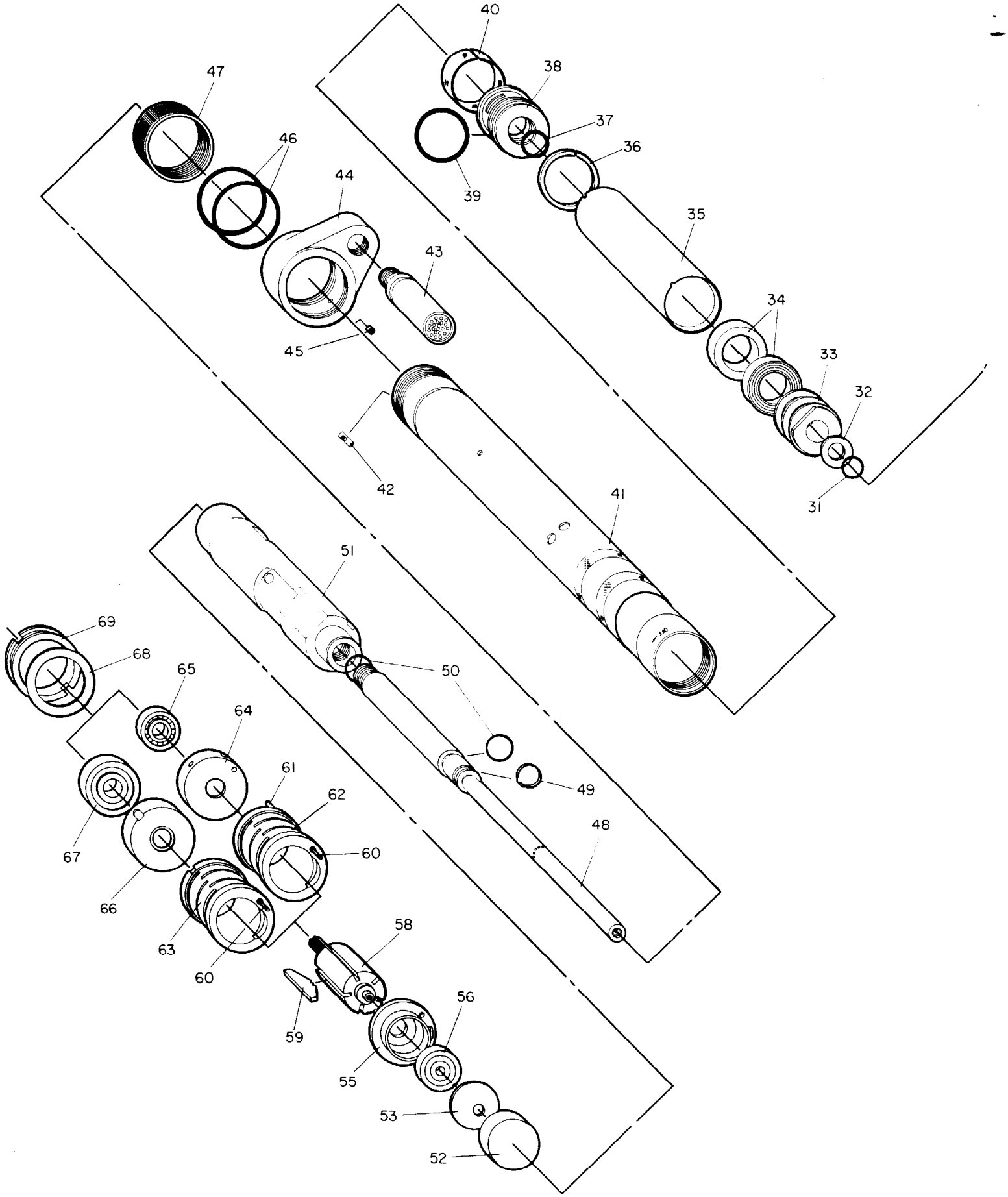


MODEL NUMBER	R.P.M.	MOTOR ASSEMBLY	AUXILIARY GEARING	DRIVE GEARING	TOTAL RED.	TWIN DRILL HEAD ATTACH.
8248–B8–( )	900	34746–2	36017	47370	23.3:1	46394 *
8248–B30–( )	2,700	33654–2		47371	8:1	46394 *
8248–B45–( )	4,400	34746–2		47370	4.83:1	46394 *

MODELS WITH –EU SUFFIX ARE "EC" COMPLIANT MODELS.

* INCLUDES ITEMS 88 THRU 111.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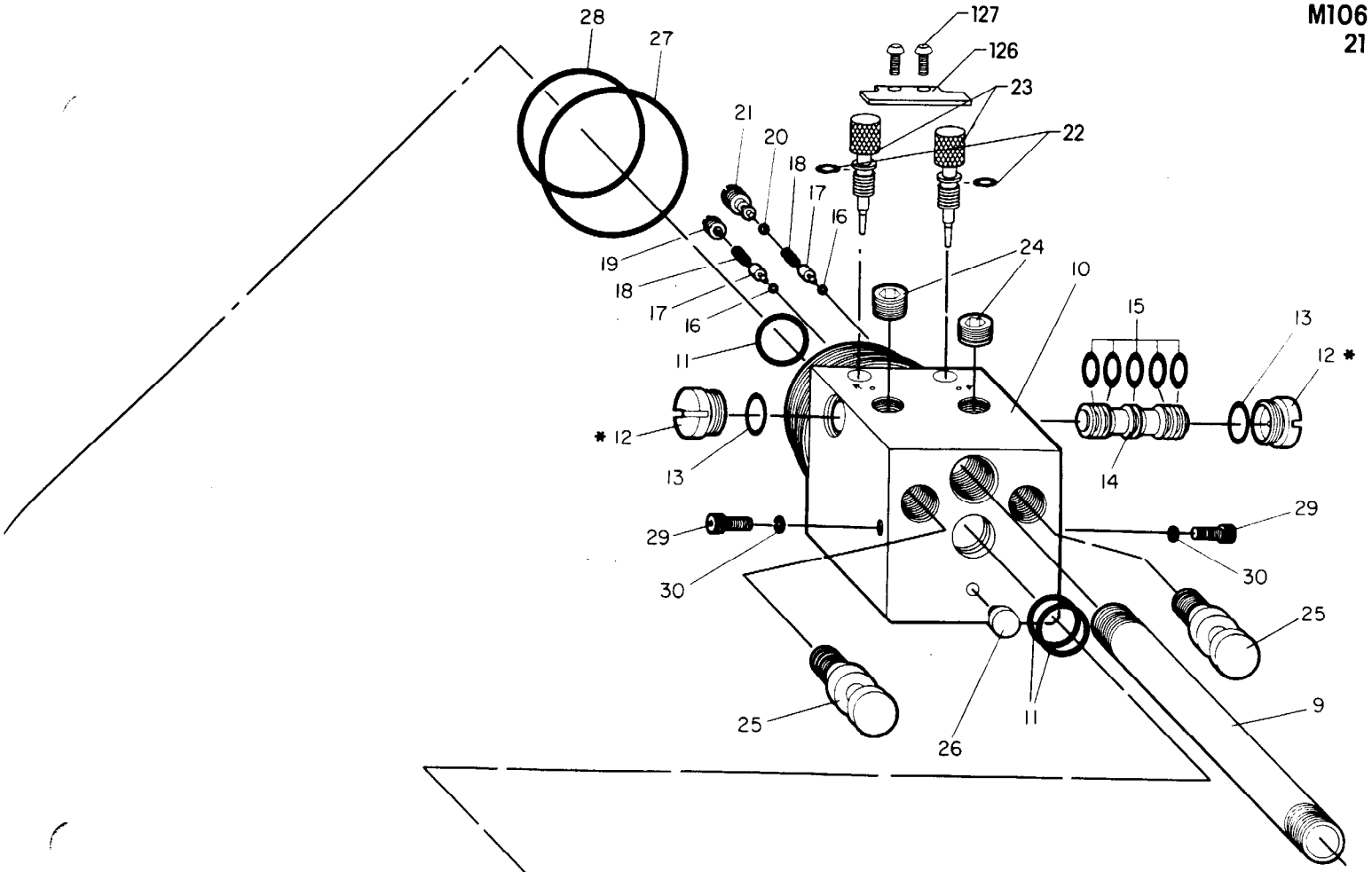
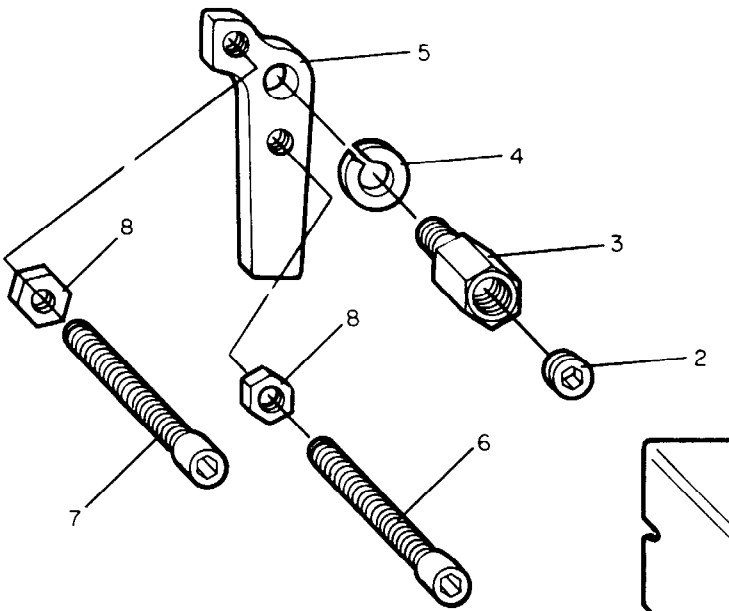
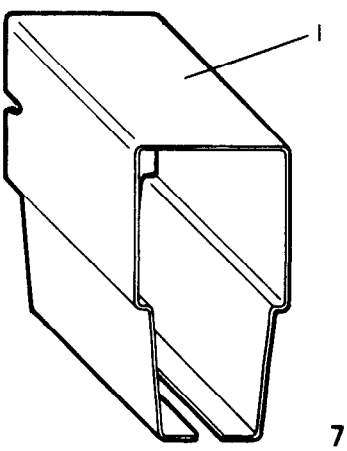


* ASSEMBLE WITH THREAD ADHESIVE SUCH AS LOCTITE 242





DISASSEMBLY/ASSEMBLY INSTRUCTIONS

- Never apply excessive pressure by a holding device which may cause distortion of a part.
- Apply pressure evenly to parts which have a press fit.
- Apply even pressure to the bearing race that will be press fitted to the mating part.
- Use correct tools and fixtures when servicing this tool.
- Don't damage "O" rings when servicing tool.
- Use only genuine ARO replacement parts for this tool. When ordering, specify part number, description, tool model number and serial number.

TWIN DRILL DISASSEMBLY

__Using 3mm hex wrench supplied with unit, loosen both adjustment screws (111) completely. IMPORTANT: Alternately unthread adjustment screws approximately 1/2 turn at a time or unthread screws simultaneously to prevent damaging the unit.
__Remove body and spindle assemblies from adapter (89).
__Remove retaining ring (93) and pull spindle (90) and components from adapter (89).
__Using retaining ring pliers, remove retaining ring (96) from gear (97).
__Remove needle roller (98) and gear (97).
__Remove retaining ring (94) and lock ring (92) from spindle.
__Bearings (95 and 91) are press fit on driving spindle (90).
__Remove "C" clip (99) from adjustment screws.
__Rotate spindle turret while pulling outward until a portion of spindle aligns with notch in body and remove spindle assembly (108) from body.
__Remove oil reservoir (106).
__Remove nylon washer (105) by bending slightly.
__Remove nylon washer (101) and gear (102).
__Bearings (103) and spacer (104) are loose parts and will drop out.
__DO NOT disassemble spindle (108) unless it is necessary to replace a part.
__To disassemble, using a flat bottom type punch or similar tool and an arbor press, remove gear (113) from spindle (125). CARE SHOULD BE TAKEN TO REPLACE GEAR (113) IN THE SAME POSITION WHEN REASSEMBLING. The gear is assembled with teeth up on turret stamped "T". The gear is assembled with teeth down on turret stamped "B".
__Remove spindle (125) from sleeve (122) carefully, as six rollers (120) are loose parts and will drop out. NOTE: Thrust race (121) is press fit on spindle.
__Using a "C" type washer that properly fits spindle, press thrust race off spindle.
__Remove oil seal (124).
__If link bearing (114) and sleeve (122) are removed from turret, it will be necessary to remove the foam strip (117) first. Lift one end of foam strip and pull so it slides thru notch under link bearing.
__Using a proper size punch and an arbor press, remove link bearing.
__Press sleeve thru remaining distance in turret.

TWIN DRILL ASSEMBLY

__Pack bearings and coat gears with a good grade of bearing grease when assembling. Saturate oil reservoirs with a good multigrade 10W/30 oil.
__When fitting sleeve (122), it is important that the slot in the sleeve lines up with the groove in the back face of the turret. Push foam strip (117) into the groove in the turret (widest side across groove). The center of the strip should be under the sleeve and the two ends should meet at the point opposite the sleeve.
__Press the link bearing (114) over the small end of the sleeve, keeping the 5mm hole in the link bearing aligned with the 5mm hole in the turret. To maintain alignment, use a 5mm pin inserted thru the bore in the link bearing and the turret.
__Assemble oil seal (124) to spindle.
__Assemble thrust race (121) to spindle, pressing on up to the shoulder. Be certain thrust race is pressed on and squarely seated, or premature failure of the bearing may occur.
__Drop the thrust race into the bore of the sleeve assembled in the turret.
__Place a small amount of grease on spindle and position the twenty needle rollers (123) between the oil seal (124) and thrust race (121).
__Place a small amount of grease on shoulder between the two thrust races and position the six rollers (120) on spindle.
__Slide spindle into sleeve, insuring foam strip is kept out of the way.
__Place a few drops of oil into sleeve and push spindle firmly down into sleeve.
__Hold spindle in position and turn turret assembly over with gear end up.
__Apply a small amount of grease to needle cage (116) and slide cage over the end of the spindle, into the bore of the link bearing.
__Place washer (115) over spindle.
__Be certain gear is positioned correctly on spindle. Position with teeth up on turret stamped "T". Position with teeth down on turret stamped "B". IMPORTANT: When pressing gear on spindle, allow an end play of .001".
__Press roll pins (107) into 1/8" diameter holes in turret. Assemble set screws (109) to spindle.
__Insert a dummy adjustment screw (111), or a shaft of the same diameter, thru body from the back or adapter side of body to maintain alignment of parts to be assembled into body.
__Assemble one nylon washer (101) over dummy screw and down into body.
__Assemble bearing (103), spacer (104) and other bearing (103) to gear (102).
__Assemble gear with bearings to dummy screw, with largest portion of gear going on screw first.
__Assemble one nylon washer (101) to screw.
__Assemble nylon washer (105) to screw, bending slightly to go thru hole in body.
__Assemble oil reservoir (106) into body and position holes for roll pins so they will align with roll pins of spindle when spindle is assembled to body.
__Assemble spindle (108) to body and screw, aligning roll pins with holes in oil reservoir and extended portion of spindle with notch in body.
__Assemble spring washer (110) and one nylon washer (101) to adjustment screw (111).
__Assemble screw (111) to unit, while at the same time withdrawing dummy screw from unit.
__Assemble "C" clip to screw (111) to secure screw to unit.
__Assemble bearings (91 and 95) to driving spindle (90).
__Assemble gear (97) to driving spindle (90), aligning hole thru gear with hole in spindle.
__Assemble needle roller (98) thru gear and spindle.
__Assemble retaining ring (96) over gear and needle roller.
__Assemble lock ring to spindle over bearing (95) and assemble retaining ring (94) to lock ring.
__Assemble driving spindle and components to adapter (89) and secure with retaining ring (93).
__Assemble the twin drill body assembly to the adapter and lock ring, alternately threading adjustment screws into lock ring, similar to disassembly.
__Refer to "spindle adjustment", page 3.

GEARING DISASSEMBLY

__Using wrenches on flats of adapter (89) and ring gear (83), unthread adapter from gearing.
__Using wrenches on flats of driving dog (88) and spindle nut (85), unthread and remove driving dog from spindle. Remove spindle nut (85) also.
__Thread adjustment screws (6 and 7) all the way back and push the piston rod (48) all the way forward to expose wrench flats of motor housing (51) from the outer sleeve (41).
__Using wrenches on flats of ring gear and motor housing, unthread gearing from motor housing.
__If tool has double gearing, unthread ring gear (83) from ring gear (81).
__Grasp ring gear in one hand and tap the threaded end of the spindle with a soft faced hammer; spindle and components will loosen from ring gear.
__Remove bearing(s) and shafts from spindle to remove planet gears.

GEARING ASSEMBLY

__Assemble gears to spindle and secure with shafts.
__Align notch at end of shaft with step on spindle (align notch of shaft with spacer (80) for auxiliary gearing).
__Pack bearing (70) with ARO 33153 grease and assemble to spindle.
__Lubricate gears of spindle liberally with ARO 33153 grease and assemble spindle to ring gear.
__Pack bearings (84) with ARO 33153 grease and assemble to spindle with the UNMARKED faces of bearing facing each other (identification markings on bearing facing out).
__Assemble spindle nut (85) to spindle (drive gearing only).
__Assemble gearing and twin drill attachment to tool.

MOTOR DISASSEMBLY

__Remove gearing from tool as previously outlined.
__Remove spacers (69 and 68) and motor assembly from housing.
__Remove cap (52) and shield (53).
__Grasp cylinder in one hand and tap splined end of rotor (58) with a soft faced hammer; motor will come apart.

MOTOR ASSEMBLY

__Pack open bearings with ARO 33153 grease.
__Assemble bearing (56) to end plate (55).
__Assemble end plate (55) to rotor.
__Coat i.d. of cylinder (62 or 63) with spindle oil 29665 and assemble cylinder to end plate (55), aligning air inlet slot of cylinder and end plate.
__Coat rotor blades (59) with spindle oil 29665 and insert in rotor slots (straight side out).
__Assemble bearing to front end plate and assemble end plate to rotor and cylinder.
__Be sure rotor does not bind (if rotor binds tap splined end of rotor lightly to loosen).
__Assemble shield (53) and cap (52) to end plate (55).
__Assemble motor and spacers (68 and 69) to motor housing.
__Assemble gearing and twin drill attachment to tool.

AIR PISTON DISASSEMBLY

__Remove twin drill attachment, gearing and motor assembly as outlined elsewhere in this manual.
__Remove cover (1), adapter (3), washer (4) and trip bracket (5).
__Place valve housing in a suitable holding device with the outer sleeve (41) in an upright position.
__Using a strap type wrench on outer sleeve (41), unthread (L.H. threads) and CAUTIOUSLY remove outer sleeve straight up and off from valve housing to prevent bending of air cylinder (35) and damaging the inside diameter.
__Handle the air cylinder (35) with care so its fine cylindrical shape is not distorted in any manner.
__If the air cylinder remains inside the outer sleeve when sleeve is removed, push the piston rod (48) forward then pull it backward. The cylinder will then extend from the sleeve and can now be removed.
__Remove "O" ring (31), bearing race (32) and retaining ring (49).
__Push piston rod and motor housing out thru gear end of outer sleeve. Piston (33) will drop out when motor housing and piston rod are removed from outer sleeve.
__Insert a suitable rod thru gear end of outer sleeve and push muffler cap (38) out thru valve end of outer sleeve.
__Piston rod (48) and motor housing (51) are secured with a hard drying thread adhesive. If it should become necessary to separate these two parts, heat the threaded area lightly to soften the adhesive and unthread the rod from the housing – R.H. threads.

AIR PISTON ASSEMBLY

NOTICE: When a part containing "O" rings has been removed from tool, it is recommended that the "O" rings be replaced with new ones when reassembling part to the tool. Lubricate all "O" rings with ARO 36460 "O" ring lubricant.

__Assemble retaining ring (36), "O" ring (37), "O" ring (39) and screen (40) to muffler cap (38).
__Assemble muffler cap (38) – screened end first – to outer sleeve (41) from end of sleeve with internal threads. Push muffler cap into sleeve until it bottoms against step in sleeve.
__Coat torque pin (42) with grease to retain pin in place and assemble inside outer sleeve in hole provided.
__Assemble "O" ring (50) to piston rod.
__Assemble motor housing and piston rod to outer sleeve thru end of sleeve with external threads and push piston rod thru muffler cap using care not to damage "O" ring (37) contained in muffler cap. Align slot in motor housing with torque pin (42).
__Assemble seals (34) to piston (33) with lips of seals facing away from each other.
__Assemble piston (33) to piston rod (48) and push piston on rod until it seats against "O" ring (50) and step on rod.
__Assemble retaining ring (49) to groove in piston rod, securing piston on rod.
__Assemble bearing race (32) and "O" ring (31) to piston rod and slide them on rod until they seat against retaining ring (49).
__Clamp valve housing (10) in a suitable holding device with the threaded end of housing upright.
__Coat i.d. of air cylinder (35) with "O" ring lubricant 36460 and place air cylinder on valve housing (10) over "O" ring (28).
__Using care not to damage "O" rings (11) contained in housing, insert piston rod (48) thru housing and carefully locate outer sleeve over air cylinder and threaded sleeve to housing. Tighten securely using a strap wrench.
__Assemble motor, gearing, drill attachment, trip bracket and components and assemble cover (1) to housing.

VALVE HOUSING DISASSEMBLY

The valve body (14), feed control valves (23) and button bleed valves (25) can be serviced without removing outer sleeve from valve housing. To gain access to check valves (17) and components or "O" rings (11), follow disassembly procedure for removing the air piston.

__Remove both caps (12) and "O" rings (13).
__Push valve body (14) out thru housing. Handle valve body with reasonable care so the o.d. of valve is not damaged.
__Button bleed valves (25) need not be removed except for replacement.

VALVE HOUSING ASSEMBLY

__Replace all "O" rings with new ones.
__Lubricate "O" rings (15) with 36460 lubricant and assemble to valve body.
__ Assemble "O" rings (22) to needle valves (23) and assemble needle valves to housing.
__ Assemble plate (126) to housing, securing with screws (127).
__Assemble valve body to housing and assemble caps (12) with "O" rings (13) to housing.
__If check valves (17) have been removed, assemble "O" rings (16) to valves and assemble valves to housing.
__Assemble springs (18) to housing.
__Assemble "O" ring (20) to screw plug (21) and assemble to housing.
__Assemble screw plug (19) to housing.
__Assemble outer sleeve and components to housing as described in air piston assembly section.

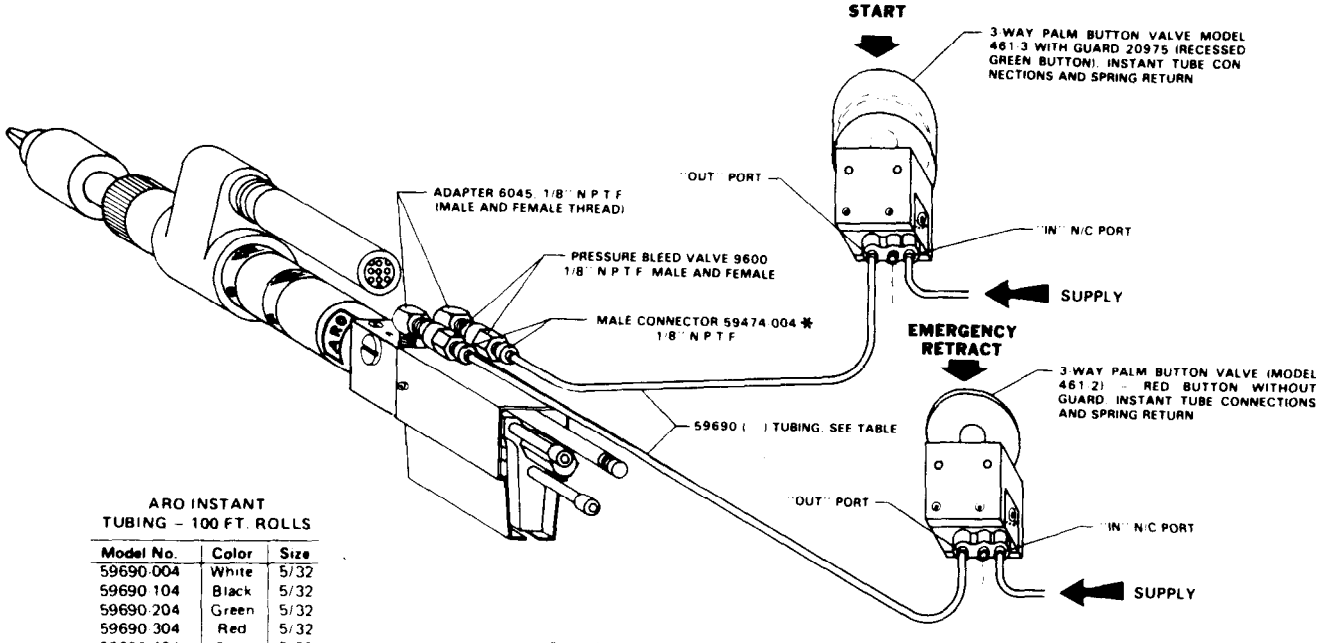
		PART NUMBER FOR ORDERING
1	Cover	
	model 8248-B( )-1	40294-1
	model 8248-B( )-2	40294
	model 8248-B( )-3	40294-2
2	Pipe Plug	Y227-2-L
3	Adapter	44883
4	Lock Washer	Y14-616
5	Trip Bracket	41713-2
6	Adjustment Screw "A"	
	models 8248-B( )-1 and 8248-B( )-2	40292-2
	model 8248-B( )-3	40292-3
7	Adjustment Screw "B"	
	model 8248-B( )-1	40292-1
	models 8248-B( )-2 and 8248-B( )-3	40292-2
8	Nut (2 req'd)	Y11-4-C
9	Pipe Nipple	
	model 8248-B( )-1	40857-5-1
	models 8248-B( )-2 and 8248-B( )-3	40857-7-1
10	Valve Housing	
	models 8248-B( )-1 and 8248-B( )-2	40285
	model 8248-B( )-3	40799
11	"O" Ring (3 req'd)	34276
12	Cap (2 req'd)	46696
13	"O" Ring (2 req'd)	Y325-12
14	Valve Body	40287
15	"O" Ring (5 req'd)	41082
16	"O" Ring (2 req'd)	Y325-2
17	Check Valve (2 req'd)	39587
18	Spring (2 req'd)	35733
19	Screw Plug	39652
20	"O" Ring	Y325-3
21	Screw Plug	38863
22	"O" Ring (2 req'd)	Y325-7
23	Needle Valve (2 req'd)	48441-1
24	Pipe Plug (2 req'd)	Y227-2-L
25	Button Bleed Valve (2 req'd)	24130
26	Stud	46558
27	"O" Ring	Y325-26
28	"O" Ring	Y325-24
29	Screw (2 req'd)	Y154-19
30	Washer (2 req'd)	Y14-4
	Housing and Valve Assembly includes items 10 thru 30	
	models 8248-B( )-1 and 8248-B( )-2	40813-1
	models 8248-B( )-3	40813-2
31	"O" Ring	41534
32	Bearing Race	42364
33	Piston	39459-1
34	Seal (2 req'd)	35922
35	Air Cylinder	
	model 8248-B( )-1	39458-1
	model 8248-B( )-2	39458
	model 8248-B( )-3	39458-2
36	Retaining Ring	39471
37	"O" Ring	Y325-16
38	Muffler Cap	39456
39	"O" Ring	Y325-24
40	Screen	39461
41	Outer Sleeve	
	model 8248-B( )-1	40750
	model 8248-B( )-2	40295
	model 8248-B( )-3	40800
42	Torque Pin	40297-1
43	Muffler	43551-2
44	Manifold (includes items 45 and 46)	41204
45	Set Screw	Y29-82
46	"O" Ring (2 req'd)	Y325-29
47	Thread Guard	35912
48	Piston Rod	
	model 8248-B( )-1	40751-1
	model 8248-B( )-2	40293-1
	model 8248-B( )-3	40801-1

		PART NUMBER FOR ORDERING	
49	Retaining Ring	Y145-20	
50	"O" Ring (2 req'd)	Y325-13	
51	Motor Housing		
	models 8248-B( )-1 and 8248-B( )-2	40296	
	model 8248-B( )-3	40802	
52	Cap	39466	
53	Shield	39465	
55	Rear End Plate	33096	
56	Bearing	38232	
58	Rotor		
	7 teeth, used with motor ass'y 33654-2	33026-1	
	12 teeth, used with motor ass'y 34746-2	34734-1	
59	Blade (5 req'd)	32860	
60	Roll Pin	33416	
61	Roll Pin	Y178-1	
62	Cylinder (includes items 60 and 61)	33397	
63	Cylinder (includes item 60)	34747	
64	Front End Plate, used with motor 33654-2	33024	
65	Bearing	32851	
66	Front End Plate, used with motor 34746-2	34742	
67	Bearing	Y65-8	
	Motor Assembly		
	for 2700 r.p.m. models	33654-2	
	for 900, 4400 and 19000 r.p.m. models	34746-2	
68	Spacer	34737	
69	Spacer	33018	
70	Bearing	32850	
71	Shaft (2 req'd)	38251	
73	Spindle	39467	
74	Gear (2 req'd) 20 teeth	33048	
75	Shaft (2 req'd)	38722	
76	Spindle	39468	
77	Gear (2 req'd) 17 teeth	34745	
78	Shaft (2 req'd)	34735	
79	Spindle	35915	
80	Spacer	34736	
81	Ring Gear	35914	
82	Retaining Ring	35900	
83	Ring Gear (includes grease fitting 35967)		
	used with 4.83:1 gearing (46 teeth)	39481	
	used with 8:1 gearing (49 teeth)	39482	
84	Bearing (2 req'd)	48305-1	Δ
85	Spindle Nut	38893-1	Δ
	Auxiliary Gearing Ass'y (4.83:1), includes items 70 (2 req'd), 77 (2 req'd), 78 (2 req'd), 79, 80, 81 and 82	36017	
	Drive Gearing Ass'y (4.83:1), includes items 70, 75 (2 req'd), 76, 77 (2 req'd), 83, 84 and 85	47370	
	Drive Gearing Ass'y (8:1), includes items 70, 71 (2 req'd), 73, 74 (2 req'd), 83, 84 and 85	47371	
88	Driving Dog	45979	
89	Adapter	46394-2	
90	Driving Spindle	46394-3	
91	Bearing	46394-4	
92	Lock Ring	46394-7	
93	Retaining Ring	46028	
94	Retaining Ring	46394-6	
95	Bearing	46394-5	
96	Retaining Ring	46394-10	
97	Driving Gear	46394-11	
98	Needle Roller	46394-9	
99	"C" Clip (2 req'd)	46394-19	
100	Body	46394-14	
101	Nylon Washer (6 req'd)	46394-18	
102	Gear (2 req'd)	46394-15	
103	Needle Bearing (4 req'd)	46394-17	
104	Spacer (2 req'd)	46394-16	
105	Nylon Washer (2 req'd)	46394-13	
106	Oil Reservoir	46394-26	
107	Roll Pin (2 req'd)	Y178-46	

Δ

		PART NUMBER FOR ORDERING
108	Spindle Assembly (2 req'd)	
	with "T" stamped on housing	46394-27-T
	with "B" stamped on housing	46394-27-B
109	Set Screw (2 req'd)	46394-24
110	Spring Washer (2 req'd)	46394-21
111	Adjustment Screw (2 req'd)	46394-20
112	Collet (2 req'd)	47368-( )
113	Gear	47757-154
114	Link Bearing	47757-155
115	Washer	47757-159
116	Needle Cage	47757-285
117	Foam Strip	47757-284
118	Turret	47757-156
119	Thrust Race	47757-157
120	Roller (6 req'd)	47757-158
121	Thrust Race	47757-306
122	Sleeve	47757-153
123	Needle Roller (20 req'd)	47757-237
124	Oil Seal	47757-286
125	Spindle	47757-152
	PARTS NOT SHOWN	
	Set Screw (in body) (2 req'd.)	45984
	Wrench – open end (8mm)	46394-29
	Wrench – box end (8mm)	46394-30
	Wrench – hex (3mm) (2 req'd.)	46394-32
	Wrench – hex (3mm)	46058
126	Plate	48440-1
127	Screw (2 req'd)	Y211-1

BASIC REMOTE CONTROL FOR START AND EMERGENCY RETRACT FUNCTIONS



ARO INSTANT TUBING – 100 FT. ROLLS

Model No.	Color	Size
59690-004	White	5/32
59690-104	Black	5/32
59690-204	Green	5/32
59690-304	Red	5/32
59690-404	Blue	5/32
59690-504	Yellow	5/32
59690-604	Gray	5/32
59690-704	Orange	5/32

*packaged 10 to a box

REMOTE OPERATION

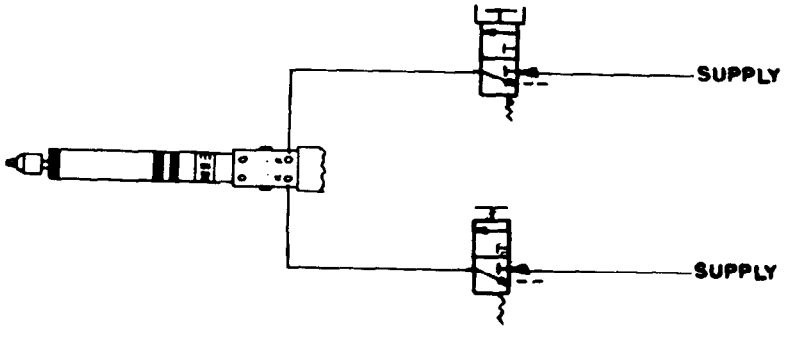
Remote operation of the unit may be achieved by connecting a 3-way valve to the remote start and/or remote retract ports, as shown above.

TO START — depress the remote button momentarily. The unit will advance the drill to a pre-set depth and automatically retract to the initial position whereupon the unit will stop.

EMERGENCY RETRACT — depress the emergency button momentarily. This signal to the unit will shift the built-in pressure operated valve, commanding the unit to retract immediately to the initial position whereupon the unit will stop.

NOTE: MANUAL START and EMERGENCY RETRACT buttons on the tool are fully operational even when remote control is used. The manually operated buttons can be used when set-up is required.

Shown below is the same system in schematic form.



47368-( ) COLLETS

COLLET PART NUMBER	BORE DIA. (REF.)	ACCEPTS DRILL SIZE INCH	NO.	MM
47368-1	.039		61	1.0
47368-2	.043		57	1.1
47368-3	.047	3/64	56	1.2
47368-4	.052		55	1.3
47368-5	.055		54	1.4
47368-6	.059		53	1.5
47368-7	.063	1/16	52	1.6
47368-8	.067		51	1.7
47368-9	.071		50	1.8
47368-10	.075		48	1.9
47368-11	.079	5/64	47	2.0
47368-12	.083		45	2.1
47368-13	.087		44	2.2
47368-14	.091		43	2.3
47368-15	.094	3/32	42	2.4
47368-16	.098		40	2.5
47368-17	.102		38	2.6
47368-18	.106		36	2.7
47368-19	.110	7/64	35	2.8
47368-20	.114		33	2.9
47368-21	.118		32	3.0
47368-22	.122		31	3.1
47368-23	.126	1/8		3.2
47368-24	.130		30	3.3
47368-25	.134		29	3.4
47368-26	.138			3.5
47368-27	.142	9/64	28	3.6
47368-28	.146		26	3.7
47368-29	.150		25	3.8
47368-30	.154		23	3.9
47368-31	.157	5/32	22	4.0

NOTE: COLLETS ARE NOT FURNISHED WITH DUAL SPINDLE ATTACHMENT – COLLETS MUST BE ORDERED SEPARATELY.

SERVICE KIT NO. 41205-1

(FOR SERVICING ONE MODEL 8248-B( )-1, -2, -3 EXCEPT MODEL 8248-B30-1, -2, -3 SEE KIT NO. 41310-1)

QTY.	PART NO.	DESCRIPTION
1	Y65-8	Bearing
1	38232	Bearing
5	32860	Blade
2	35733	Spring
2	35922	Seal
1	39461	Screen
1	39466	Cap
1	41795	Motor Oil
1	41799	Gear Lube
1	41954	"O" Ring Lube
2	Y325-2	"O" Ring
1	Y325-3	"O" Ring
2	Y325-7	"O" Ring
2	Y325-12	"O" Ring
2	Y325-13	"O" Ring
1	Y325-16	"O" Ring
2	Y325-24	"O" Ring
1	Y325-26	"O" Ring
3	34276	"O" Ring
5	41082	"O" Ring
1	41534	"O" Ring

SERVICE KIT NO. 41310-1

(FOR SERVICING ONE MODEL 8248-B30-1, -2, -3)

QTY.	PART NO.	DESCRIPTION
1	32851	Bearing
1	38232	Bearing
5	32860	Blade
2	35733	Spring
2	35922	Seal
1	39461	Screen
1	39466	Cap
1	41795	Motor Oil
1	41799	Gear Lube
1	41954	"O" Ring Lube
2	Y325-2	"O" Ring
1	Y325-3	"O" Ring
2	Y325-7	"O" Ring
2	Y325-12	"O" Ring
2	Y325-13	"O" Ring
1	Y325-16	"O" Ring
2	Y325-24	"O" Ring
2	Y325-26	"O" Ring
3	34276	"O" Ring
5	41082	"O" Ring
1	41534	"O" Ring

TROUBLE SHOOTING

LISTED BELOW ARE SOME OF THE MOST COMMON CAUSES FOR THE SELF-FEED DRILL TO MALFUNCTION. MALFUNCTIONS BEYOND THE SCOPE OF THIS MANUAL SHOULD BE BROUGHT TO THE ATTENTION OF YOUR ARO REPRESENTATIVE OR RETURN THE TOOL TO FACTORY FOR REPAIR.

CONDITION	POSSIBLE CAUSE	CORRECTIVE ACTION
Failure to feed or irregular or erratic feed.	1. Inadequate air supply.	1. Check air supply for correct regulator adjustment (90 p.s.i.g. max. when tool is operating).
	2. Feed control valves improperly adjusted.	2. Refer to set-up procedure, page 1.
	3. Air leak around cap (12).	3. Check for damage to "O" ring. Check and insure caps are properly tightened.
	4. Dirt or damaged "O" rings on spool valve (14).	4. Refer to valve section, page 9, and remove spool valve. Inspect, clean and replace "O" rings.
	5. Clogged air passage in valve housing.	5. Remove valve housing from tool. Disassemble and blow all air passages clear of debris.
Low speed or motor fails to operate.	1. Inadequate air supply.	1. Check air supply for correct regulator adjustment.
	2. Clogged air passage in valve housing.	2. Remove valve housing from tool. Disassemble and blow all air passages clear of debris.
Motor continues to run after retraction.	1. Piston not fully retracted.	1. Insure piston is not obstructed and is returned all the way back.
	2. Damaged "O" ring (11) inside valve housing.	2. Remove valve housing from tool. Replace "O" rings.
Failure to retract.	1. Improper adjustment or alignment between adjustment screw and button bleed valve.	1. Refer to set-up procedure, page 1.
	2. Feed control valves (23) improperly adjusted or dirty.	2. Check adjustment, refer to page 2. Remove, inspect and clean.
	3. Air leak around cap (12).	3. Check for damage to "O" ring. Check and insure caps are properly tightened.
	4. Damaged "O" rings in muffler cap, valve housing or spool valve or seals on piston.	4. Disassemble, inspect and replace "O" rings and/or seals.
	5. Clogged air passage in valve housing.	5. Remove valve housing from tool. Disassemble and blow air passages clear of debris.